4/91
Moose
Alces alces

Range:
Moose are holarctic in distribution. In North America, three subspecies occupy Alaska, Canada, Maine, the Selkirk Range into northern Washington, and the Rocky Mountains south to northern Utah.

Washington Distribution:
The Shiras moose has been expanding its range from the Kalispell Basin to much of the Selkirk Range in northeast Washington. In the Selkirk's, moose are now distributed as far west as Colville and southward to Spokane. In addition, a few moose from Canada wander south in the Cascades. A couple of moose are occasionally seen on the outskirts of Bellingham, while others are seen near Winthrop.

Habitat Requirements:
Calving sites are characterized by roadless blocks of mature timber of 32+ ha (80+ acres) which provide hiding cover and contain or are adjacent to good forage. Human disturbance is minimal. Several such sites are found within any one drainage (Costain 1989).

Aquatic feeding sites are found in areas of slow flowing water, ponds, swamps, and potholes of at least 9 square meters (100 square feet) in size,
0.3 - 2 m (1-6 feet) deep which contain abundant submergent and emergent aquatic vegetation. Larger aquatic areas are preferred. These sites are characterized by a broad zone of hiding cover around the perimeter of the feeding site (Costain 1989).

Summer range includes both clearcut and forested areas. Timber harvest in Washington has precipitated the moose population increase over the last 30 years. We need to protect some forested areas but moose are generally not dependent on old-growth. Forested summer range includes stream bottoms and other moist areas inside mature timber stands of 40 ha (100 acres) or more with 70 percent canopy closure. These areas should contain a narrow but productive zone of understory forage (Costain 1989). Forage consists of willow, boxwood, maple, evergreen ceanothus and serviceberry. Clearcuts and seedtree cuts 5-35 years old, and natural openings which are dominated by saplings and brush are utilized both summer and winter. They must have little disturbance and have escape cover islands of leave-trees and brush to create internal edge. Broadcast burning and prescribed burning can increase forage (Irwin 1976).

Winter range is determined by snow depth and aspect (Costain 1989, Pierce,

1984). When snow depth exceeds 75 cm (30 inches), moose depend on closed canopy areas. They use multi-storied stands of mature and old growth timber with >70 percent canopy closure with abundant understory and arboreal lichens which are 20 - 80 ha (50-200 acres) in size. Sapling/shrub dominated openings created by clearcut logging are heavily used. When snow depth is not a factor, moose prefer areas in 15-30 year old successional stages. These can be burned or clearcut areas.

Limiting Factors:
The amount of quality winter range at middle elevations (about 3,000 feet) limits moose numbers. Calf production is linked to effective snow depth based on accessibility to sapling/shrub dominated openings with sufficient thermal cover nearby (Costain 1989, Pierce 1984).

Management Recommendations:
Limit access of motorized vehicles by road closures to help reduce poaching and disturbance. Studies by Pierce (1984) in Idaho show unregulated moose harvest may equal or exceed legal harvest. In Washington, poaching of moose is also a problem.

Maintain several calving sites per large drainage (Costain, 1989). Provide for hiding cover buffers, wide enough to hide adult moose, around one-half or more of the perimeter of aquatic feeding sites.

An overall timber rotation on summer and winter range should be 100 years with 10 percent removal per decade except for south and western exposures and forest reserves (Jageman 1986, Telfer, 1974).

Maintain a sufficient number of 40 ha (100 acre) mature or old growth timber patches interspersed with openings on summer range to support the moose population. Openings should be irregular, 90 - 360 m (300-1,200') wide, and contain hiding cover patches. Blast potholes, and broadcast burn and prescribe burn to maintain forage areas.

On winter range, maintain forage openings that are less than 8 ha (20 acres) and 240 m (800') wide and surrounded by at least 90 m (300') of cover. Reserve multi-storied stands of mature and old growth timber on south and west exposures with >70 percent canopy closure that are 20 - 80 ha (50-200 acres) in size (Costain 1989).

References:
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Key Points:

Habitat Requirements:

- Old growth timber or slopes with snow depth less than 30" on south and west exposures.
- Small openings adjacent to thermal cover patches containing shrubs on winter range.
- Openings adjacent to or containing escape cover patches as well as thermal cover patches on summer range.
- Relatively undisturbed large acreages of suitable calving habitat.
- Aquatic vegetation surrounded by hiding cover on summer ranges.

Management Recommendations:

- Reserve some mature and old growth timber on appropriate sites.
- Manage non-reserved timber on 100 year rotation at 10 percent per decade.
- Intersperse small to moderate-sized openings with moderate to large-sized cover areas.
- Use prescribed and broadcast burning to stimulate forage.
- Blast potholes in summer range.
- Cut willow patches every few years to provide forage for moose.